

## A STUDY ON LEPTADEN (VET) ON THE GROWTH, MATURITY AND BLOOD LEVELS OF INORGANIC CALCIUM, PHOSPHORUS AND TOTAL CHOLESTEROL OF WHITE LEGHORN PULLETS

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**ABSTRACT:** Leptaden (Vet)\* when fed to White Leghorn chicks @ 1.5 g/kg feed from 7 to 120 days of age and again from 141 days of age to the end of experiment did not produce any effect on the body weight of chicks upto 7th week of age, however, from 8th week it started showing improvement in the body weight and at the age of 120 days there was a significant ( $P<0.05$ ) increase in body weight of treated groups of 3 replicates out of four. The treated birds in two replicates matured 5 and 9 days earlier than their control. Blood levels of inorganic calcium and phosphorus were not affected in birds treated with Leptaden at the age of 60 and 120 days. At the age of 180 days there was a significant increase in inorganic phosphorus level but no effect of calcium level at the ages was observed. The blood level of total cholesterol was not affected at 60 days of age, however, at the age of 120 and 180 days it was significantly ( $P<0.05$ ) increased in 2 replicates.

Leptaden (Vet) has been found to improve growth, maturity and egg production in poultry (Natrajan, 1968; Samal, 1974; Ishwar, 1980). Recently it has also been shown to improve growth in broiler chicks and egg production in layers (Ishwar, 1980). In the present investigation we have studied effect on the growth, maturity and blood levels of inorganic calcium, phosphorus and total cholesterol in White Leghorn pullets.

### MATERIALS AND METHODS

Two hundred and forty eight day-old White Leghorn chicks vaccinated against Mareck's and Ranikhet diseases were divided equally into eight groups and kept in electric battery brooders. The experiment was conducted on four replicates each having its own control and treated groups. The chicks were provided with standard starter ration upto 60 days of age followed by grower ration upto 120 days and then standard layer ration upto the end of experiment ad lib. either plain (control groups) or mixed with drug @ 1.5 g/kg feed (treated groups). They were provided with vitamins, antibiotics, coccidiostat and deworming agents as usual. At 120 days of age they were shifted group-wise to brooder houses. No drug was given from 121 to 140 days of age. Fresh water was available all the time. Debeaking was done whenever required. Body weight of individual birds was recorded weekly from day-old to 120 days of age. The age at which birds got matured and started laying was noted by recording egg production in individual groups of birds in all replicates. The age at which birds laid eggs at 5% Hen-day Egg Production (% HEP) was considered as age of maturity. Weekly % HEP was calculated according to the following formula:

$$\text{Weekly \% HEP} = \frac{\text{No. of eggs produced in that week}}{\text{No. of Hen-days in that week}} \times 100$$

Serum inorganic calcium, plasma inorganic phosphorus and total cholesterol were determined according to Clark and Collips (1925), Fiske and Subba Row (1925) and Zak (1975), respectively. Blood was collected every time from 10 birds of each group from four replicates through decapitation at the age of 60 days or through wing vein at the age of 120 and 180 days using EDTA as anticoagulant for collection of plasma. Statistical analysis was done according to Snedecor and Cochran (1967).

## RESULTS AND DISCUSSION

Table 1: Effect of Leptaden (Vet) on the growth of female White Leghorn chicks from 8th week to 16th week of age (Average Body Weight in g  $\pm$  S.E.)

Age (week)	Replicate I		Replicate II		Replicate III		Replicate IV	
	Control	Treated	Control	Treated	Control	Treated	Control	Treated
VIII	594.33 $\pm$ 8.75 (30)	620.37* $\pm$ 9.22 (31)	604.66 $\pm$ 9.63 (30)	608.18 $\pm$ 8.73 (30)	604.31 $\pm$ 8.73 (29)	644.99* $\pm$ 9.05 (31)	671.95 $\pm$ 10.15 (23)	644.42 $\pm$ 9.54 (27)
IX	616.58 $\pm$ 11.36 (24)	713.77* $\pm$ 10.72 (24)	621.84 $\pm$ 9.70 (24)	633.78 $\pm$ 10.31 (24)	611.39 $\pm$ 9.80 (23)	663.42 $\pm$ 11.79 (24)	725.88 $\pm$ 13.09 (17)	663.42 $\pm$ 11.79 (21)
X	76.533 $\pm$ 17.17 (24)	800.12 $\pm$ 17.67 (24)	740.83 $\pm$ 6.41 (24)	767.91 $\pm$ 6.77 (24)	774.56 $\pm$ 16.51 (23)	796.63 $\pm$ 16.83 (23)	823.98 $\pm$ 16.88 (17)	761.80 $\pm$ 16.50 (21)
XI	831.41 $\pm$ 17.39 (24)	881.24 $\pm$ 17.39 (24)	830.58 $\pm$ 16.70 (24)	865.43 $\pm$ 17.06 (24)	849.43 $\pm$ 17.40 (23)	875.99 $\pm$ 17.40 (23)	892.41 $\pm$ 17.80 (17)	876.85 $\pm$ 17.85 (21)
XII	931.37 $\pm$ 15.55 (24)	961.95 $\pm$ 15.55 (24)	936.15 $\pm$ 18.10 (24)	937.69 $\pm$ 15.48 (24)	952.65 $\pm$ 15.14 (23)	973.81 $\pm$ 15.48 (23)	990.52 $\pm$ 17.68 (17)	972.95 $\pm$ 17.21 (21)
XIII	979.91 $\pm$ 15.63 (24)	1017.29 $\pm$ 20.79 (24)	958.08 $\pm$ 18.25 (24)	999.17 $\pm$ 18.64 (24)	954.17 $\pm$ 14.91 (23)	1035.13* $\pm$ 15.25 (23)	1066.82 $\pm$ 17.55 (17)	1034.37 $\pm$ 18.39 (21)
XIV	1049.58 $\pm$ 17.98 (24)	1097.74* $\pm$ 17.59 (24)	985.45 $\pm$ 18.03 (24)	1062.60* $\pm$ 18.03 (24)	993.13 $\pm$ 15.44 (23)	1084.58* $\pm$ 15.78 (23)	1099.52 $\pm$ 31.93 (17)	1084.42 $\pm$ 28.72 (21)
XV	996.79 $\pm$ 17.22 (24)	1172.48* $\pm$ 31.05 (24)	927.62 $\pm$ 17.31 (24)	1100.72* $\pm$ 18.08 (23)	974.82 $\pm$ 15.38 (24)	1128.04* $\pm$ 15.72 (24)	1131.64 $\pm$ 32.34 (17)	1099.52 $\pm$ 29.09 (21)
XVI	1162.20 $\pm$ 17.69 (24)	1231.76* $\pm$ 31.76 (24)	1073.95 $\pm$ 20.99 (24)	1198.81* $\pm$ 21.92 (23)	1110.47 $\pm$ 16.52 (23)	1213.40* $\pm$ 16.69 (24)	1248.04 $\pm$ 32.33 (17)	1207.28 $\pm$ 29.09 (21)

\*Significant at 5% levels. Figures in parenthesis indicate the number of birds.

There were no significant differences in the body weight of chicks upto 7th week of age in all the replicates. However, from 8th week onwards there was a significant improvement ( $P < 0.05$ ) in the treated groups of replicate I and III. A further improvement in body weight of treated group in replicate I at 9th, 14th, 15th and 16th week of age was observed. From 14th week onward upto the age of 16th week, birds belonging to the treated groups of replicates I, II and III showed significant ( $P < 0.05$ ) increase in body weight (Table 1). There was no significant change in the body weight of birds in replicate IV. The reason for this could not be explained. These results indicated that Leptaden had no effect on the growth of chicks upto 7th week of age but after that the drug improved the body weight of the birds. Birds belonging to treated groups of replicate I laid eggs @ 8.6% HEP at the age of 140 days in comparison to control birds which laid @ 8.6% HEP at 149 days of age. Thus the birds matured 9 days earlier in this replicate. In replicate II and III, birds belonging to both groups matured at 152 and 149 days of age, respectively. However, in replicate IV, the treated birds matured at 148 days i.e. 5 days earlier than the control which matured at 153 days of age. This showed that Leptaden could produce early maturity to start laying 5 to 9 days earlier than non-treated birds. Natrajan (1968) observed increased body weight and Samal (1974) reported early maturity in birds treated with Leptaden.

There was no significant change in the level of inorganic calcium in the treated groups of all the four replicates at 60, 120 and 180 days of age and the calcium level remained within the normal range. However at the age of 120 days we observed a little higher values (19.49 to 21.99 mg/100 ml) than those reported by Joshi et al. (1963), Nangia et al. (1963) and Mohsin and Pal (1977), ranging from 12.41 to 14.38 mg/100 ml of blood of White Leghorn pullets. The birds used in this experiment matured earlier, therefore their ovaries were active and started secreting estrogen, which increased the inorganic calcium level at this age. At the age of 180 days all the birds were laying and their calcium level ranged from 27.74 to 32.99 mg/100 ml in all the replicates. There was no significant change in the blood level of inorganic phosphorus at 60 and 120 days of age and the values remained within the normal range varying from 2.43 to 4.64 mg/100 ml blood. At 180 days of age the phosphorus level was increased significantly ( $P < 0.05$ ) in treated groups of replicate I, II and IV. Values as low as 2.5 mg/100 ml of blood has been reported by Beljan et al. (1971) in poultry birds.

Total cholesterol was not affected by the drug at the age of 60 days, however, at the age of 120 days in replicate I and at the age of 180 days in replicate IV, it was significantly ( $P < 0.05$ ) increased from 130.77 mg (control) to 157.33 mg (treated) and from 266.40 mg (control) to 282.78 mg/100 ml blood (treated), respectively.

These observations have shown that Leptaden has no effect on the level of blood calcium and phosphorus at 60 and 120 days of age, however it influenced the latter at the age of 180 days. Total cholesterol level in blood was not affected at 60 days of age, however at the age of 120 and 180 days it was increased significantly in few replicates.

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